

Atty. Docket No. GEDP106US

## MULTIPLE CRITERIA BUYING AND SELLING MODEL

by

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### CERTIFICATION UNDER 37 CFR 1.10

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**Title: MULTIPLE CRITERIA BUYING AND SELLING MODEL****Technical Field**

5 The present invention relates to an e-commerce multiple criteria buying and selling methodology and more particularly to a method and apparatus of using the e-commerce multiple criteria buying and selling methodology to conduct business electronically.

**Background of the Invention**

10 The buying and selling of products and services has resulted in a vast array of buying schemes which are used to vary the price at which such products are sold.

One of the most common buying schemes which business encounter everyday is known as volume buying. According to this buying scheme, sellers set a fixed unit price for their products based on the volume of units that a buyer is willing to purchase. Buyers  
15 desiring to purchase products from the seller are each required to pay the same fixed price depending on the volume of units the buyer is purchasing. If a seller finds that the demand for a given product is greater or less than expected, the seller may later adjust the fixed price per unit of the product to account for such findings. Although the fixed price per unit system provides a simple way for a seller to conduct business with multiple  
20 buyers, one drawback of this buying scheme is that it fails to provide buyers with a choice between a variety of different buying criteria that may be just as important or more important to the buyer than price.

For example, a buyer that is in need of goods, such as raw materials to make products for an expedited order may be willing to pay a higher price for a faster delivery  
25 time. Another buyer may be concerned with the quality of the goods they are purchasing, such that the buyer would pay a higher price for goods having a minimum number of defects. Yet another buyer may be concerned with the warranty time allotted for the

goods they are purchasing, and may want the warranty of the goods that they are purchasing to match or exceed the warranty the buyers are offering their own customers.

Yet another buying scheme which has been advanced in recent years is buyer-driven bidding. According to this buying scheme, a single buyer desiring to obtain a product communicates a price at which the buyer is willing to purchase the product to multiple sellers. Each of the sellers is provided an opportunity to review the buyers price. A sale is complete when one of the sellers agrees to sell the product to the buyer at the price suggested by the buyer. A buyer-driven bidding scheme is described in U.S. Pat. No. 5,794,207 assigned to Walker Asset Management Limited Partnership of Stamford, Conn. Another buyer-driven bidding scheme is described in U.S. Pat. No. 5,897,620 assigned to priceline.com Inc of Stamford, Conn. While the buyer-driven bidding scheme provides advantages for certain types of transactions when, for example, sellers may be willing to sell products at lower than normal prices, the uncertainties involved with whether a buyer's offer will be accepted is often problematic for high volume commercial transactions in which the reliability that a transaction will be complete is of paramount importance. Another problem with the present buying schemes is that the buyer's have no control in determining the criteria of the product or services that they may receive, while the seller has no control of the type of purchase that the buyer's request.

While the buying schemes described above have various advantages and disadvantages in different situations, a commonality among all of the buying schemes is that each buyer is not given the opportunity to choose amongst different buying criteria, which could be more important to the buyer than the price of the goods and/or services. Furthermore, each seller is not given a chance to offer their goods and/or services based on different selling criteria. In many instances sellers are not even aware of what buyer's consider important buying criteria. Additionally, sellers are sometimes not aware of what other selling criteria that other seller's might offer buyers.

Accordingly, there is a strong need in the art for a multiple criteria buying and selling scheme which provides both buyers and sellers more control in a commercial purchasing transaction, and overcomes the above mentioned drawbacks and others.

Summary of the Invention

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b1 > According to a preferred embodiment of the present invention, a multiple criteria buying and selling methodology is provided. The multiple criteria buying and methodology is structured to provide buyers and sellers with a variety of information relating to criteria in the purchasing of products to complete a business transaction. By providing the buyers and sellers with a variety of information, the buyers are able to make an informed decision in the buying process relating to each buyer's particular needs, and the seller's are able to control the type of purchases for their goods and services. To facilitate buying and selling products using the multiple criteria buying and selling methodology, an electronic forum is provided whereby buyers and sellers are able to conveniently exchange information and order products.

In the multiple criteria buying and selling methodology, a seller initially establishes a deal structure for a product, which provides selling criteria information relating to the purchasing of the product, such as volume per unit price, quality, delivery time and warranty information that a buyer will be able to review if the selling criteria matches a buyer inputted buying criteria. The deal structure is preferably set up so as to provide buyers with both price and non-price criteria information that the buyer's would consider important in a purchase of the type of product being offered by the seller. The deal structure is electronically made available to potential buyers of the product. For example, the deal structure may be displayed on an Internet site.

Accordingly, the multiple criteria buying and selling methodology provides more control for both buyers and sellers in the purchasing process. Buyer's define the buying criteria which they feel is important in purchasing a particular good or service. Seller's define the selling criteria which the seller feels is important to both the buyer and the seller. The buyer is provided with a list of deals in which the buyer's buying criteria falls within the seller's selling criteria. Furthermore, the multiple criteria buying methodology encourages the completion of deals. The multiple criteria buying and selling methodology allows a buyer to complete a deal in an expedited manner. The buyer can

control their criteria and the seller can control their criteria allowing a more efficient manner of conducting business.

Thus, according to one aspect of the present invention, a business transaction methodology is provided. The methodology includes the steps of offering a plurality of deals for at least one of a product and service offered by at least one seller inputting a plurality of buying criteria by a buyer for the at least one of a product and service, and outputting a list of deals from amongst the plurality of deals that match the buying criteria of the buyer.

In accordance with another aspect of the present invention an Internet business transaction system is provided. The Internet business transaction system, includes a computer adapted to be employed by a facilitator for hosting a commercial transaction over the Internet, the computer providing access to at least one buyer and at least one seller to carry out the commercial transaction, wherein at least one buyer makes a purchase from the at least one seller when a plurality of buying criteria defined by the buyer matches a plurality of selling criteria defined by the seller.

In accordance with yet another aspect of the present invention, a method of conducting a business transaction is provided. The method includes the steps of electronically offering a plurality of deals on at least one of a product and service for sale, each of said plurality of deals being based on different offering criteria than each other of said plurality of deals, electronically searching the deals on the product for sale based on a plurality of ordering criteria, outputting a list of deals of the plurality of deals which offering criteria matches the ordering criteria and selecting one of the deals of the list of deals which offering criteria matches the ordering criteria.

In accordance with another aspect of the present invention, an electronic signal is provided that is adapted to be transmitted between at least two computers. The electronic signal includes an algorithm for matching a buyer with at least one deal offered by at least one seller, the algorithm matches the buyer with the at least one deal based on a plurality of buying criteria defined by the buyer which matches a plurality of selling criteria defined by the at least one seller.

In accordance with yet another aspect of the present invention an Internet business transaction system is provided. The internet business transaction system includes means for hosting a commercial transaction over the Internet, the means for hosting provides access to at least one buyer and at least one seller to carry out the commercial transaction, wherein the at least one buyer makes a purchase from the at least one seller when a plurality of ordering criteria, fall within the outer limits of a plurality of offering criteria, each ordering criteria being based on a buyer defined buying criteria, and each offering criteria being defined by the seller.

In accordance with yet another aspect of the present invention an Internet business transaction system is provided. The Internet business transaction system includes a first computer adapted to be employed by a facilitator for hosting a commercial transaction over the Internet, a second computer adapted to be used by a buyer to link to the first computer to participate in the commercial transaction, a third computer adapted to be used by a seller to link to the first computer to participate in the commercial transaction, wherein the buyer makes a purchase from the seller when a plurality of buyer defined buying criteria matches a plurality of seller defined selling criteria.

In accordance with yet another aspect of the present invention a server is provided. The server includes a processor, a memory coupled to the processor, and a network interface coupled to the processor for transmitting and receiving data with at least one remote computer system, wherein a plurality of deals for a product offered for sale electronically is stored in the memory, each of the plurality of deals having different seller defined selling criteria, and wherein the server is configured to receive orders for the product from a plurality of different buyers via the at least one remote computer system, by providing the plurality of different buyers with at least one deal of the plurality of deals matching a plurality of buyer defined buying criteria.

In accordance with still yet another aspect of the present invention, a system for conducting business electronically is provided. The system includes a central server, at least one computer system coupled to the server via a network, wherein a plurality of deals for a product offered for sale electronically is stored in the central server, each of

the plurality of deals having different seller defined selling criteria, and wherein the server is configured to receive orders for the product from a plurality of different buyers via the at least one remote computer system, by providing the plurality of buyers with at least one deal of the plurality of deals matching a plurality of buyers defined buying  
5 criteria.

To the accomplishment of the foregoing and related ends, the invention then, comprises the features hereinafter fully described and particularly pointed out in the claims. The following description and the annexed drawings set forth in detail certain illustrative embodiments of the invention. These embodiments are indicative, however,  
10 of but a few of the various ways in which the principles of the invention may be employed and the present invention is intended to include all such embodiments and their equivalents. Other objects, advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the drawings.

#### **Brief Description of the Drawings**

  
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Fig. 1 illustrates a diagrammatic view of a system for electronically conducting business in accordance with one aspect of the present invention;

Fig. 2a illustrates a block diagram of a central server in accordance with one aspect of the present invention;

20 Fig. 2b is a schematic illustration of a client computer operatively coupled to a server computer system in accordance with one aspect of the present invention;

Fig. 3 illustrates a web page providing options to buyers and sellers desiring to conduct business electronically in accordance with one aspect of the present invention;

Fig. 4a illustrates a buyer's buying criteria input screen in accordance with one  
25 aspect of the present invention;

Fig. 4b illustrates a buyer's product ordering criteria input screen in accordance with one aspect of the present invention;

Fig. 4c illustrates a list of seller's deals matching the buyer's product ordering criteria in accordance with one aspect of the present invention;

Fig. 5 illustrates a flow chart for a buyer desiring to conduct business electronically in accordance with one aspect of the present invention;

5 Fig. 6 illustrates an on-line registration form for a buyer in accordance with one aspect of the present invention;

Fig. 7 illustrates a buyer database stored in a central server in accordance with one aspect of the present invention;

10 Fig. 8a illustrates a web page for a buyer to create or modify a deal in accordance with one aspect of the present invention;

Fig. 8b illustrates a seller's buying and selling criteria input screen in accordance with one aspect of the present invention;

Fig. 8c illustrates a seller's product ordering criteria input screen in accordance with one aspect of the present invention;

15 Fig. 8d illustrates an input screen for adding buying and selling criteria to the deal in accordance with one aspect of the present invention;

Fig. 9 illustrates a flow chart for a seller desiring to conduct business electronically in accordance with one aspect of the present invention;

20 Fig. 10 illustrates an on-line registration form for a seller in accordance with one aspect of the present invention; and

Fig. 11 illustrates a seller database stored in the central server in accordance with one aspect of the present invention.

### **Detailed Description of the Invention**

25 The present invention will now be described with respect to the accompanying drawings in which like numbered elements represent like parts.

Referring initially to Fig. 1, a system 10 is shown in which multiple buyers 15 and sellers 20 are electronically linked via a central server 25. As discussed in more detail below, the central server 25 is configured to provide the buyers 15 and sellers 20 with a



convenient forum in which to buy and sell goods in accordance with a multiple criteria buying and selling methodology described herein. The forum may, for example, be a preestablished Internet web page where sellers 20 are able to post product information and the buyers 15 are able to order products. The multiple criteria buying scheme preferably calls for a seller 20 to post a number of deals for a given product, which vary according to different offering criteria defining the limits of a number of selling criteria, such as for example, price, volume, quality and delivery time. Each buyer 15 is able to enter a range of criteria that the buyer would require for a deal to be made. A list of sellers and prospective deals offered by these sellers is generated for the buyers to review. Each buyer 15 can then review the list of deals and choose a deal based on the buyers particular needs. In this manner, each of the buyers 15 can be certain that particular thresholds have been met and also be guaranteed of completing a deal.

It is to be appreciated that the present invention has wide applicability to the purchasing and/or selling of a variety of different products and/or services. For example, the present invention may be applied within the context of purchasing and/or selling airline tickets wherein buyers criteria may include, for example: (1) reputation of airline; (2) reliability; (3) timeliness; (4) price; (5) number of alternative flights; (6) comfort; (7) quality of service; and (8) quality of foods. The sellers' criteria may include, for example: (1) volume of tickets; (2) buyer's versatility in time schedule; (3) buyer's method of payment, *etc.*

The present invention may also be applied in the context of purchasing and/or selling an automobile wherein buyer's criteria may include, for example: (1) reputation of automobile manufacturer; (2) reputation of dealer; (3) price of automobile; (4) delivery options; (5) automobile availability; (6) safety; and (7) financing terms; *etc.* While, the seller's criteria may include, for example: (1) buyer's creditworthiness; (2) desired finance terms; (3) delivery requests of buyer; (4) delivery dates; *etc.*

Thus, the present invention intends to allow buyers and/or sellers of products and/or services to pre-select a plurality of criteria prior to negotiating a deal for the product and/or service. Of course the preselected criteria will vary depending on the

particular product and/or service. The scope of the present invention as defined in the hereto appended claims intends to include any product and/or service (and plurality of pre-selected criteria associated therewith) suitable for deal-making in accordance with the present invention.

5 Each of the buyers 15 and sellers 20 may access the central server 25 in any of a variety of ways. For example, in the present embodiment, each buyer 15 and seller 20 is shown to be part of separate establishments 30 which include one or more respective computer systems 35 and local servers 40. The computer systems 35 may, for example, be a desktop or laptop computer with a local area network (LAN) interface for  
10 communicating over a network backbone 45 to the local server 40. The local servers 40, in turn, interface with the central server 25 via a network cable 50 or the like. It will be appreciated that while the present embodiment depicts the computer system 35 communicating with the central server 25 via hardwired network connections, in an alternative embodiment the computer system 35 may interface with the central server 25  
15 using a modem, wireless local area and/or wide area networks, etc. Further, it will be appreciated, that while the buyers 15 and sellers 20 are shown to communicate with the central server 25 via different computer systems 35, it will be appreciated that the buyers 15 and/or sellers 20 may access the central server 25 from the same computer system 25.

Turning now to Fig. 2a, a block diagram of the hardware components of the  
20 central server 25 is shown. In particular, the central server 25 includes a central processor 100 for performing the various functions described herein. A memory 105 is coupled to the processor 100 and stores operating code and other data associated with the operations of the central server 25. A user interface 110 is also coupled to the processor 100 and provides an interface through which the central server 25 may be directly programmed or  
25 accessed. The user interface 110 may, for example, be an alphanumeric keyboard and mouse. A network interface 115 coupled to the processor 100 provides multiple connections for transceiving information with buyers 15 and sellers 20 over the network cables 50.

As previously stated, the present invention could take advantage of the wide availability and versatility of the Internet. Referring to Fig. 2b, a schematic block diagram that depicts an environment of interest to a preferred embodiment of the present invention. The client computer system 35 is shown connected to the central server computer system 25 that is part of the Internet 60. The client computer system 35 and server 25 are connected *via* an Internet connection 55 using a public switched phone network, for example, such as those provided by a local or regional telephone operating company. The Internet connection 55 may also be provided by dedicated data lines, Personal Communication Systems ("PCS"), microwave, or satellite networks, for example, or any suitable means. It is to be understood that the terms client and server are to be construed in the broadest sense, and that all such constructions of the terms are intended to fall within the scope of the hereto appended claims.

Turning now to Fig. 3, an exemplary Internet web page 120 which provides buyers 15 and sellers 20 with access to a forum for conducting business using the multiple criteria buying methodology described in detail below, is shown. The web page 120 is shown to include hyperlinks for handling both registered and un-registered buyers and sellers of products. For example, as shown in Fig. 3, registered buyers may select a hyperlink to a registered buyer login screen via hyperlink 125 while non-registered buyers may select a hyperlink to a non-registered buyer registration screen via hyperlink 135. Similarly, registered sellers may select a hyperlink to a registered seller login screen via hyperlink 130, while non-registered sellers may select a hyperlink to a non-registered seller registration screen via hyperlink 140. While the present embodiment illustrates separate hyperlinks for buyers and sellers, it will be appreciated that such hyperlinks could alternatively be combined and the status of buyer or seller could be determined during a later stage in the login procedure.

Turning now to Fig. 4a, in accordance with one embodiment of the present invention, registered buyers 15 enter several product buying criteria into a "Buyer's Buying Criteria" input page 150. The buyer 15 selects a product or service from a list in a scroll down menu 152. It should be appreciated that the list on the scroll down menu 152

could include any number of related or non-related goods and services only limited by the size of a database used in accordance with the present invention. Upon selecting a product or service (e.g., glass) from the scroll down menu 152, a list of seller criteria automatically appears in a window 160. The list of seller criteria appearing in the window

5 160 is the minimum inputs to be provided by the buyer to obtain a deal listing. These minimum inputs are decided by the class of sellers selling the individual product or service and/or decided by the system administrator of the system. The buyer 15 can then begin adding buyer buying criteria by selecting the criteria from a scroll down list 154, and clicking on an "Add to List" button 156 with a computer mouse (not shown), for

10 example. If the buyer 15 desires to remove a buyer buying criteria, it is only necessary to highlight the criteria in the window 160 and click on a "Remove from List" button 158. Once the list is completed, the buyer 15 may add additional criteria thought to be important to the buyer not in the selection of choices. These additional criteria will not be used by the buyer in this particular deal search, but will be provided to the sellers, so

15 that they can be alerted of these additional criteria important to the buyer. The seller may opt to add to the selectable choices these additional buyer's buying criteria at a later time. Once the complete custom buyer buying criteria list is completed, the buyer can click on the "Submit Criteria" button 162 for submission of the buyer's buying criteria to build a "Buyer's Product Ordering Criteria" input screen 165, as illustrated in Fig. 4b.

20 Turning now to Fig. 4b, in accordance with one embodiment of the present invention, registered buyers 15 enter several product ordering criteria that would be acceptable to the buyer 15 on the "Buyer's Product Ordering Criteria" input screen 165. In this particular example, the buyer 15 is looking to purchase raw glass by the pound, however, many different types of products and services could be purchased/sold using the

25 present invention. The buyer's ordering criteria of this example includes: price range 166 in dollars per pound; volume range 168 in number of pounds; delivery range 170 in days; the acceptable % of defects 172 in percent; and the minimum required warranty 174 in months. The buyer 15 can then list the names of the sellers 20 in the window 176 that the buyer 15 has bought products from previously, so that the buyer 15 can be entitled to any

good customer or multi-purchase discounts offered by the sellers 20. Once the buying ordering criteria is entered, the buyer can search for deals by clicking on the "Search for Deal" button 178 on the computer screen using the computer's mouse. The present invention then utilizes a search engine to search through a database of deals offered by various sellers of the product, and provides an output of those deals to the buyer that matches the buyer's ordering criteria by outputting a list of these deals on a "Deal Matching Ordering Criteria" output page 180, as shown in Fig. 4c.

Turning now to Fig. 4c. in accordance with one embodiment of the present invention, registered sellers 20 set up a variety of deals 182 by which registered buyers 15 are able to order products. As will be discussed in more detail below, the deals 182 of the present embodiment are set up to display the following information which is input from the seller 20 and/or calculated by the processor 100 of the central processor 25 according to the deal 182, which includes: a seller name 184; a deal number 186; a volume ordering range required 188 to obtain a current price/pound level 190; an expected delivery time 192; a warranty period 196; and a percentage of defects 198 of the product the buyer 15 can expect to receive in a given order. Based on such information, buyers 15 can make an informed decision as to whether they desire to commit to an order on a particular deal based on the criteria that is important to that particular buyer. If a buyer 15 desires to place an order, the buyer 15 inputs a seller 183, a deal number 185 and a volume order 187. The buyer 15 then clicks on the "Submit Deal" button 189 with a mouse pointer, for example, on the computer display and the deal is finalized.

Turning now to Fig. 5, the general steps taken by a buyer 15 entering the web page 150 is shown. More particularly, in step 200 it is initially determined whether a buyer 15 is registered or not. If the buyer 15 is not registered, the buyer 15 selects hyperlink 135 (Fig. 3) and proceeds to step 205. In step 205 the processor 100 of the central server 25 requests that the buyer 15 fill out a registration form. For example, the buyer 15 is requested to fill out a registration form 208 such as that shown in Fig. 6. In the present example, the registration form 208 requests that the buyer 15 enter the following information: buyer name; address; primary contact person; phone; fax; e-mail; short

description of company; preferred login user name; and preferred password. With respect to the user name and password, the processor 100 is configured to determine whether the selected user name and password combination are available and, if not, to prompt the buyer 15 to enter a new user name and password until an available combination is selected.

In step 210 (Fig. 5), the buyer is requested to fill out a credit card application so that purchases made on the web site may be immediately approved. The credit card registration and approval process may be accomplished via a hyperlink to one of various electronic credit card approval agencies which check the buyer's credit rating and set up a merchant account with a line of credit. For example, an electronic credit card approval agency which may be used in conjunction with the present invention can be found on the Internet at <http://www.interent-ecommerce.com>. Next, in step 215, the processor 100 determines if the credit card application has been approved by the electronic credit card approval agency. If the credit card application has not been approved, the processor 100 proceeds to step 220 where a message is sent back to the buyer 15 indicating regret that they have not been approved for a line of credit and therefore have not successfully completed the registration process. In step 220, a customer service telephone number also is provided to the buyer 15 in case the buyer has questions and/or desires to pursue registration further.

If in step 215, the processor 100 is informed that the buyer 15 has been provided a line of credit and a credit card number has been issued, the processor 100 proceeds to step 225. In step 225 the buyer information from the registration form 208 and the newly issued credit card number are stored in a buyer database 270 (Fig. 7) in the memory 105 of the processor 25 (Fig. 2a). Next, in step 230, the processor 100 is configured to provide the buyer 15 with the newly issued credit card number so that the buyer 15 is able to purchase products and/or services. Furthermore, the processor 100 is configured to provide a report to the system administrator who then mails a confirmation copy of the buyer's information stored in the buyer's database to the buyer 15. This completes the buyer's registration process.

Continuing to refer to Fig. 5, if in step 200, a buyer has already registered, the buyer 15 may login as a registered user by selecting the registered user hyperlink 125 (Fig. 3). Once selected, the processor 100, in step 240 prompts the buyer 15 to enter a user ID and password. Upon entry of such information, the processor 100 in step 240  
5 verifies the user ID and password with those stored in the buyer database 270 (Fig. 7). If the user ID and password entered by the buyer 15 does not match any entry in the buyer database 270, the processor 100 in step 240 returns to step 235 for re-entry of such information. If, however, in step 240, a valid user ID and password are entered, the processor 100 proceeds to step 245.

10 In step 245, the processor 100 provides the buyer 15 with a buyer's buying criteria input screen where the buyer 15 is able to enter a variety of buying criteria that is important to that particular buyer 15. The buyer 15 selects a plurality of buying criteria and submits the criteria, so that the system can build an input ordering criteria form. In  
15 step 250, the buyer 15 enters the range of ordering criteria that is acceptable to the buyer in the input ordering criteria form, and then submits this criteria causing the system search engine to match the ordering criteria with a list of seller deals in a seller deal database. The search engine then lists the seller deals matching the buyer's buying and ordering criteria. As discussed above, the deals 182 provided to the buyer 15 provide the  
20 buyer 15 with information regarding the sale of a particular product such as, for example, the volume range to get a particular price per pound, the delivery time, the warranty period and the percentage of defects in each order that a buyer can expect. In order to allow a buyer to quickly find deals 182 of interest, the processor 100 in step 245 provides the buyer 15 with the input "Buyer's Buying Criteria" input screen 150, so that active deals 182 of interest may be found.

25 Once a search is completed, the buyer 15 in step 250 is able to select a desired deal 182 from the results obtained. For example, the buyer 15 may choose a desired deal because it has a faster delivery time than the other deals. The buyer 15 may choose a deal because it has a low percentage of defects in the goods, or has a longer warranty than other goods. Regardless of the deal, the buyer 15 may choose, the buyer 15 can make an

informed decision based on a variety of buying criteria. If the buyer 15 is unsatisfied with the search results or simply desires to re-perform the search, the buyer 15 at any time is able to return back to a previous screen selecting the "back" function available using an Internet browser such as, for example, Microsoft Internet Explorer, Netscape, etc.

5 Additionally, a hyperlink to various screens, such as the search screen, preferably is provided on each web page.

Upon selecting a deal 182, the processor 100 in step 255 displays a page of standard terms and conditions which the buyer 15 must agree to prior to completing the deal. The terms and conditions relate to the terms governing the sale of the product or  
10 service according to which both the buyer and seller are willing to conduct business. If the terms and conditions are not accepted, the processor 100 returns the buyer 15 to step 245, so that another deal 182 may be selected and/or another search may be performed. If, however, in step 260 the terms and conditions are accepted, the processor 100 proceeds to allow the buyer 15 to complete the deal in step 265.

15 Turning now to Fig. 8a, in accordance with one embodiment of the present invention, registered sellers 20 enter into a "Create or Modify Deal" screen 275. The seller 20 can choose a product or service from the product/service scroll down menu 276 and choose to either click on an "Open New Deal" button 278, a "Modify Existing Deal" button 280 or a "Review Buyer Inputted Criteria" button 282. If the buyer selects the  
20 "Review Buyer Inputted Criteria" button 282, the seller will be provided with a list of buyer buying criteria that the buyers 15 manually inputted into the window 160 of Fig. 4a. This allows the sellers 20 to review criteria that is important to their buyers, which the seller were not aware. If a seller 20 chooses to click on the "Open New Deal" button 278, the seller 20 will enter into a "Seller's Product Selling Criteria" input screen 300, as  
25 illustrated in Fig. 8b. If the seller 20 chooses to click on the "Modify Existing Deal" button 280, the seller 20 will enter into a "Seller's Product Offering Criteria" input screen 330, as illustrated in Fig. 8c with the seller being prompted to enter a deal number, which causes the ordering criteria of the chosen deal number to be editable in the input screen.



Referring to Fig. 8b illustrating the "Seller's Selling Criteria" input screen 300, the seller 20 can begin building a new deal by first selecting a number of seller additional criteria, and seller criteria from a list in a scroll down menu 302 and a list in scroll down menu 306, respectively. The seller can click on the "Add Seller Additional Criteria" button 304 for adding seller additional criteria from the scroll down menu 302 into a window 310 containing a deal criteria list 303. The deal criteria list 303 includes a first portion listing the "Product Agreed upon Seller Criteria" 305, decided by the group of sellers for a particular product/service and/or the system administrator, a second portion which is the seller criteria list 307 and a third portion which is the seller additional criteria list 309. It should be noted that the criteria in the seller additional criteria list is not a mandatory criteria for the buyer when the buyer is inputting the buyer's buying criteria in step 245 of Fig. 5, but is listed in the terms and condition step 265 after a deal is chosen by the buyer. The seller can add seller criteria by selecting the criteria from the scroll down bar 306 and clicking on the "Add Seller Criteria" button 308. The seller can remove any of the criteria from the overall criteria list, except for the "Product Agreed upon Seller Criteria", by highlighting the selection with the computer mouse and clicking on a "Remove from List" button 312. The seller 20 can add new selling criteria by clicking on a hyperlink 316 labeled "Add New Criteria" sending the seller 20 to an "Adding and Modifying Deal Criteria" screen 360, illustrated in Fig. 8d. The seller can modify a current criteria by highlighting the criteria in window 310 and clicking on a hyperlink 318 labeled "Modify Existing Criteria" sending the seller to the "Adding and Modifying Deal Criteria" screen 360 with the criteria information defaulting to the highlighted criteria for modification therefrom.

Referring now to Fig. 8c, once the criteria is selected and submitted, the system generates the "Seller's Product Offering Criteria" input screen 330. A seller number 331, a product type 332 and a current deal number 333 are automatically generated at the top of input screen 330. The seller 20 can enter offering limits relating to the selling criteria of the seller's product for a particular deal. The seller's offering criteria of this example includes: price 166 in dollars per pound; volume range 168 in the number of pounds;

delivery time 170 in days; the % of defects 172 in percent; and the warranty 174 in months. The seller 20 can then list the names of the buyers 15 in a window 344 that the deal is being offered or type in the term "All" if the offer is open to any buyer. Once the seller offering criteria is entered, the seller 20 can submit the deal by clicking on a

5 "Submit/Modify Deal" button 350 on the computer screen by using the computer's mouse. The present invention then creates a record of the deal in a database of deals offered by various sellers 20 of the product, so that deals which seller's offering criteria match the buyer's ordering criteria can be outputted to the buyer 15 in a list of deals on the "Deals Matching Ordering Criteria" output page 180, as shown in Fig. 4c.

10 Referring now to Fig. 8d, the "Adding Deal Criteria" input screen 360 will be described. The seller number 331, the product type 332 and the current deal number 333 are automatically generated at the top of input screen 360. The seller 20 can enter a criteria name in the "Enter Criteria Name" box 362. The seller can then choose whether the criteria is a seller type or a seller additional criteria type from a first scroll down menu

15 364. The seller 20 choose a criteria type from a second scroll down menu 366 and the criteria units in a third scroll down menu 368. The seller can submit this new criteria for the current deal by clicking on the "Submit New Criteria for Current Deal" button 370 or add the new criteria for all the product deals by clicking on the "Submit New Criteria for All Product Deals" button 372. The seller 20 may at any time review the buyer inputted

20 criteria submitted by the buyer 15 that is not in any of the seller's deals by clicking on the "Review Buyer Inputted Criteria" button 376. The seller 20 can review this list to determine whether or not the seller 20 would like to add this criteria to the present deal or all deals to ensure that they are in accord with buyer needs. The seller 20 may also review the criteria that are offered by other sellers, but not the current seller, by clicking

25 on a "Review Other Seller Criteria" button 378. This will help the seller keep current on what the other seller's selling criteria are being utilized for matching to the buyer's buying criteria to satisfy the current market demands.

If the seller would like to return to the "Create or Modify Deal" screen 275 the seller 20 can click on the "Cancel" button at any time. Furthermore, if the seller 20

simply desires to re-perform the search, the seller 20 at any time is able to return back to a previous screen selecting the "back" function available using an Internet browser such as, for example, Microsoft Internet Explorer, Netscape, etc. Additionally, a hyperlink to various screens, such as the search screen, preferably is provided on each web page.

5           Proceeding now to Fig. 9, the operations of the processor 100 of the central server 25 in handling sellers 20 is depicted. In particular, the processor 100 in step 400 initially determines whether a seller 20 is registered or not based on which hyperlink 130, 140 (Fig. 3) the seller 20 selects. If the seller 20 selects hyperlink 140 indicating the seller is not registered, the processor 100 proceeds to step 405. In step 405, the processor 100  
10       provides the seller 20 with a seller's registration form 408 (Fig. 10) to fill out. The registration form 408 is similar to the registration form 208 for the buyer 20 and allows the seller 20 to select a preferred user ID and password. Once completed, the processor 100 proceeds to step 410 where the seller 20 is requested to submit a credit card application so that all costs and fees associated with conducting business may be directly  
15       billed to the seller's credit card. As discussed above, the credit card approval process may occur by a third party vendor accessible via a hyperlink.

          Once the credit card application is submitted by the seller 20, the processor 100 proceeds to step 415 where the processor 100 determines if the credit card application has been approved. If the credit card application has not been approved, the processor 100  
20       proceeds to step 420 where the seller 20 is informed that their credit card application has not been approved and the seller 20 is provided with a customer service telephone number so that the seller 20 may optionally set up the account in a different fashion. If, however, in step 415 the credit card application is accepted, the processor 100 proceeds to step 425 where the seller information is stored in a seller database 427 (Fig. 11). Finally,  
25       in step 430, the processor 100 is configured to provide the seller 20 with the newly issued credit card number so that the seller 20 is able to open deals. Further, the processor 100 is configured to provide a report to a system administrator who then mails a confirmation copy of the seller's information stored in the seller's database to the seller 20. This completes the seller's registration process.

Continuing to refer to Fig. 9, if in step 400 a seller has already registered, the seller 20 may login as a registered user by selecting the registered user hyperlink 130 (Fig. 3). Once selected, the processor 100, in step 435 prompts the seller 20 to enter their user ID and password. Upon input of the user ID and password, the processor 100  
5 proceeds to step 440 where the processor 100 verifies a valid user ID and password have been entered by comparison with the information stored in the seller database 427 (Fig. 11). If the user ID and password entered by the seller 20 does not match any entry in the seller database 427, the processor 100 in step 440 returns to step 435 for re-entry of such information. If, however, in step 440, a valid user ID and password are entered, the  
10 processor 100 proceeds to step 445.

Upon successful entry of a user ID and password, the seller 20 is provided with a seller option screen 275 as shown in Fig. 8a. For example, the seller 20 may decide to open a new deal 182 or the seller 20 may decide to view a current deal 182 for one of a number of goods or services offered by the seller 20 or review a list of buyer inputted  
15 criteria. Accordingly, if in step 445, the processor 100 determines that the seller 20 desires to open new deal 182 for a selected product, the processor 100 proceeds to step 460.

In step 460, the processor 100 requests that the seller 20 enter the seller's selling criteria, so that the system can build a seller's product offering criteria input screen, in  
20 step 465. For example, in the present embodiment the product agreed upon seller criteria is the volume range of the order and the price per pound of the order, the seller's selling criteria includes the delivery time and warranty with quality to be added next, and the seller additional criteria is that the buyer pay the cost of shipping the goods. As discussed above, the processor 100 utilizes the information input from the seller 20 to display a  
25 seller's product ordering input form 330.

In step 465, the processor 100 request that the seller enter the limits associated with the seller's selling criteria chosen in step 460, and the list of buyer's entitled to be offered the present deal. The information is entered and submitted to form a deal. The processor 100 uses this information to match buying and ordering criteria of the buyer

with selling and offering criteria of the seller, so that deals can be completed in an expedited manner.

Continuing to refer to Fig. 9, if in step 445, the seller 20 has not selected to open a new deal, the processor 100 determines in step 450 whether the seller 20 has decided to modify an existing deal 182. In the present embodiment of the invention, the seller 20 is limited to modify those deal which they have opened. Accordingly, if the processor 100 determines that the seller does desire to modify a deal 182, the processor 100 provides the seller 20 with a list of deals 180 which the seller has opened. Upon selection of one of the deals 182, the processor 100 proceeds to step 455 where the deal 182 is displayed to the seller 20. If a deal 182 is not entered in step 450, or following steps 455 and 460, the processor 100 returns to step 445.

The present invention may be implemented *via* object oriented programming techniques. In this case each component of the system, could be an object in a software routine or a component within an object. Object oriented programming shifts the emphasis of software development away from function decomposition and towards the recognition of units of software called "objects" which encapsulate both data and functions. Object Oriented Programming (OOP) objects are software entities comprising data structures and operations on data. Together, these elements enable objects to model virtually any real-world entity in terms of its characteristics, represented by its data elements, and its behavior represented by its data manipulation functions. In this way, objects can model concrete things like people and computers, and they can model abstract concepts like numbers or geometrical concepts.

The benefit of object technology arises out of three basic principles: encapsulation, polymorphism and inheritance. Objects hide or encapsulate the internal structure of their data and the algorithms by which their functions work. Instead of exposing these implementation details, objects present interfaces that represent their abstractions cleanly with no extraneous information. Polymorphism takes encapsulation one step further - the idea being many shapes, one interface. A software component can make a request of another component without knowing exactly what that component is.

The component that receives the request interprets it and figures out according to its variables and data how to execute the request. The third principle is inheritance, which allows developers to reuse pre-existing design and code. This capability allows developers to avoid creating software from scratch. Rather, through inheritance,  
5 developers derive subclasses that inherit behaviors which the developer then customizes to meet particular needs.

In particular, an object includes, and is characterized by, a set of data (*e.g.*, attributes) and a set of operations (*e.g.*, methods), that can operate on the data. Generally, an object's data is ideally changed only through the operation of the object's methods.

10 Methods in an object are invoked by passing a message to the object (*e.g.*, message passing). The message specifies a method name and an argument list. When the object receives the message, code associated with the named method is executed with the formal parameters of the method bound to the corresponding values in the argument list.

15 Methods and message passing in OOP are analogous to procedures and procedure calls in procedure-oriented software environments.

However, while procedures operate to modify and return passed parameters, methods operate to modify the internal state of the associated objects (by modifying the data contained therein). The combination of data and methods in objects is called encapsulation. Encapsulation provides for the state of an object to only be changed by  
20 well-defined methods associated with the object. When the behavior of an object is confined to such well-defined locations and interfaces, changes (*e.g.*, code modifications) in the object will have minimal impact on the other objects and elements in the system.

Each object is an instance of some class. A class includes a set of data attributes plus a set of allowable operations (*e.g.*, methods) on the data attributes. As mentioned  
25 above, OOP supports inheritance - a class (called a subclass) may be derived from another class (called a base class, parent class, etc.), where the subclass inherits the data attributes and methods of the base class. The subclass may specialize the base class by adding code which overrides the data and/or methods of the base class, or which adds new data attributes and methods. Thus, inheritance represents a mechanism by which

abstractions are made increasingly concrete as subclasses are created for greater levels of specialization.

5 The present invention can employ abstract classes, which are designs of sets of objects that collaborate to carry out a set of responsibilities. Frameworks are essentially groups of interconnected objects and classes that provide a prefabricated structure for a working application. It should also be appreciated that the PCM and the shared memory components could be implemented utilizing hardware and/or software, and all such variations are intended to fall within the appended claims included herein.

10 According to an exemplary embodiment of the present invention, Java and CORBA (Common Object Request Broker Architecture) are employed to carry out the present invention. Java is an object-oriented, distributed, secure, architecture neutral language. Java provides for object-oriented design which facilitates the clean definition of interfaces and makes it possible to provide reusable "software ICs." Java has an extensive library of routines for copying easily with TCP/IP protocols like HTTP and 15 FTP. Java applications can open and access objects across a network *via* URLs with the same ease to which programmers are accustomed to accessing a local file system.

20 Furthermore, Java utilizes "references" in place of a pointer model and so eliminates the possibility of overwriting memory and corrupting data. Instead of pointer arithmetic that is employed in many conventional systems, the Java "virtual machine" mediates access to Java objects (attributes and methods) in a type-safe way. In addition, it is not possible to turn an arbitrary integer into a reference by casting (as would be the case in C and C++ programs). In so doing, Java enables the construction of virus-free, tamper-free systems. The changes to the semantics of references make it virtually impossible for applications to forge access to data structures or to access private data in objects that they 25 do not have access to. As a result, most activities of viruses are precluded from corrupting a Java system.

Java affords for the support of applications on networks. Networks are composed of a variety of systems with a variety of CPU and operating system architectures. To enable a Java application to execute anywhere on the network, a compiler generates an

architecture neutral object file format -- the compiled code is executable on many processors, given the presence of the Java runtime system. Thus, Java is useful not only for networks but also for single system software distribution. In the present personal computer market, application writers have to produce versions of their applications that are compatible with the IBM PC and with the Apple Macintosh. However, with Java, the same version of the application runs on all platforms. The Java compiler accomplishes this by generating byte code instructions which have nothing to do with a particular computer architecture. Rather, they are designed to be both easy to interpret on any machine and easily translated into native machine code on the fly.

Being architecture neutral, the "implementation dependent" aspects of the system are reduced or eliminated. The Java virtual machine (VM) can execute Java byte codes directly on any machine to which the VM has been ported. Since linking is a more incremental and lightweight process, the development process can be much more rapid and exploratory. As part of the byte code stream, more compile-time information is carried over and available at runtime.

Thus, the use of Java in the present invention provides a server to send programs over the network as easily as traditional servers send data. These programs can display and manipulate data on a client computer. The present invention through the use of Java supports execution on multiple platforms. That is the same programs can be run on substantially all computers - the same Java program can work on a Macintosh, a Windows 95 machine, a Sun workstation, etc. To effect such multi-platform support, a network interface 105 and a network browser (not shown) such as Netscape Navigator or Microsoft Internet Explorer may be used in at least one embodiment of the present invention. It should be appreciated, however, that a Java stand-alone application may be constructed to achieve a substantially equivalent result. Although the present invention is described with respect to employing Java, it will be appreciated that any suitable programming language may be employed to carry out the present invention.

An Internet explorer (e.g., Netscape, Microsoft Internet Explorer) is held within the memory of the client computer. The Internet Explorer enables a user to explore the



Internet and view documents from the Internet. The Internet Explorer may include client programs for protocol handlers for different Internet protocols (*e.g.*, HTTP, FTP and Gopher) to facilitate browsing using different protocols.

5 It is to be appreciated that any programming methodology and/or computer architecture suitable for carrying out the present invention may be employed and are intended to fall within the scope of the hereto appended claims.

The invention has been described with reference to the preferred embodiments. Obviously, modifications and alterations will occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be  
10 construed as including all such modifications alterations, and equivalents thereof and is limited only by the scope of the following claims.